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GREER, BURNS & CRAIN 300 S WACKER DR 25TH FLOOR CHICAGO, IL 60606			ARENDT, PAISLEY L	
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/585,791	<b>Applicant(s)</b> POWER ET AL.	
	<b>Examiner</b> PAISLEY L. ARENDT	<b>Art Unit</b> 2883	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 23 October 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) See Continuation Sheet is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) See Continuation Sheet is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 July 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Drafts, Person's Patent Drawing, Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)  | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>10/23/2008</u>   | 6) <input type="checkbox"/> Other: _____                          |

Continuation of Disposition of Claims: Claims pending in the application are 1,4,7,9,10,12,14,17-19,21,26,28,30,33,34,38,42,43,45,49,51,53,54,57-60,62,64-66 and 68.

Continuation of Disposition of Claims: Claims rejected are 1,4,7,9,10,12,14,17-19,21,26,28,30,33,34,38,42,43,45,49,51,53,54,57-60,62,64-66 and 68.

## **DETAILED ACTION**

### **Specification**

1. The disclosure is objected to because of the following informalities:
  - a. Page 5, line 24, and page 7, line 7 – “orientating layer 12” is presumed to be “orientating layer 14.”
  - b. Page 7, lines 9, 11 and 12 – “PPN layer 16” is presumed to be “PPN layer 14.”
  - c. Page 11, line 9 – “substrate 52” is presumed to be “substrate 51.”
  - d. Page 11, line 32, and page 12, lines 2 and 7 – “security document 51” is presumed to be “security document 50.”

Appropriate correction is required.

### **Claim Objections**

2. Claims 7, 30, 33, 42, 49, 53, 58, 59 and 66 are objected to because of the following informalities:
  - a. Claim 7 – “the primer layer” lacks antecedent basis, since claim 7 now depends on claim 1.
  - b. Claim 7 – “ziconium complexes” is presumed to be “zirconium complexes.”
  - c. Claim 30 is presumed to be “according to claim 1 wherein the orientating layer...”
  - d. Claim 33 – “an orientating layer” is presumed to be “the orientating layer,” as in the same one of claim 1.

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e. Claim 42 – “a substrate” is presumed to be “the substrate,” as in the same one of claim 1.

f. Claim 49 – “orientation layer” is presumed to be “orientating layer,” for consistency.

g. Claim 53 – “the prime layer” is presumed to be “the primer layer.”

h. Claims 58, 59 and 66 – “the step of...” lacks antecedent basis and is presumed to be “a step of...”

Appropriate correction is required.

### **Claim Rejections - 35 USC § 112**

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 17 and 18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 17 and 18 both depend on claim 16, which has been canceled. For examination purposes, claim 17 is considered to depend on claim 14, and claim 18 is considered to depend on claim 17. It is also presumed that claim 18 is intended to read “said one or more opacifying pigments are selected from the group...”

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**Claim Rejections - 35 USC § 103**

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. **Claims 53, 54, 57-60, 62, 65, 66 and 68** are rejected under 35 U.S.C. 103(a) as being unpatentable over Schadt et al. (US 6,160,597), of record in the IDS, in view of Yamaoka et al. (US 6,819,382 B2).

Regarding **claim 53**, Schadt discloses a method of manufacturing a security document or device (see abstract and col. 4, lines 41-54) comprising:

providing a substrate (1, Figs. 1-5) which includes at least one layer of polymeric material (col. 4, lines 55-59);

applying an orientating layer (2, Figs. 1-5) over the substrate;

aligning the molecules of the orientating layer (col. 4, lines 64-65); and

applying a liquid crystal polymer (LCP) layer (3, Figs. 1-5) over the orientating layer.

Schadt fails to explicitly disclose applying a primer layer on at least one side of the substrate.

However, Yamaoka discloses a method of manufacturing a device (see abstract) comprising applying a primer layer on at least one side of a substrate (col. 16, line 29 – col. 17, line 8), and applying an orientating layer over the primer layer (col. 15, lines 5-31).

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It would have been obvious to one having ordinary skill in the art at the time of applicant's invention to incorporate applying a primer layer on at least one side of the substrate, as in Yamaoka, into the method of Schadt, since the motivation to bond layers of optical components to substrates in order to secure them together so as to prevent them from separating is highly obvious in the art.

Regarding **claim 54**, Schadt fails to explicitly disclose the step of applying the primer layer is performed by applying a primer including a polymer component and a cross-linker.

However, Yamaoka discloses the step of applying the primer layer is performed by applying a primer including a polymer component and a cross-linker (col. 16, lines 33-41).

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to incorporate the step of applying the primer layer being performed by applying a primer including a polymer component and a cross-linker, as in Yamaoka, into the method of Schadt, since these materials have excellent light transmittance and adhesiveness (Yamaoka, col. 16, line 29 – col. 17, line 8).

Regarding **claim 57**, Schadt discloses the step of applying the orientating layer over the substrate is performed by applying a solution containing a photo orientating polymer network (PPN) over the substrate (col. 4, lines 53-54 and col. 7, lines 57-58).

Again, Schadt fails to explicitly disclose a primer layer.

However, Yamaoka discloses a primer layer (col. 16, line 29 – col. 17, line 8).

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It would have been obvious to one having ordinary skill in the art at the time of applicant's invention to incorporate a primer layer, as in Yamaoka, into the method of Schadt, since the motivation to bond layers of optical components to substrates in order to secure them together so as to prevent them from separating is highly obvious in the art.

Regarding **claim 58**, Schadt discloses a step of drying the substrate to remove solvent from the PPN solution wherein a strong adhesive bond is formed between the orientating layer and the substrate (col. 7, lines 58-60).

Regarding **claim 59**, Schadt discloses the orientating layer includes a photoalignment layer and further including a step of exposing the photoalignment layer to polarized light to align the molecules of the photoalignment layer (col. 4, line 64 – col. 5, line 7).

Regarding **claim 60**, Schadt discloses the photoalignment layer is subjected to a first exposure of polarized light through a mask to form local regions having a first orientation of molecules (col. 1, lines 50-53), and the photoalignment layer is subjected to a second exposure without a mask using a different component of the polarized light to form local regions having a second orientation to form an orientation pattern in the orientating layer (see 7 and 8, Figs. 4-5, and col. 5, lines 48-58).



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Regarding **claims 62 and 64**, Schadt discloses an orientation pattern is formed in the photoalignment layer and/or the LCP layer by a variable printing process, and the orientation pattern is formed by a laser writing process (col. 2, lines 5-15).

Regarding **claim 65**, Schadt discloses the LCP layer is formed by applying a coating of liquid crystal monomers to the orientating layer such that the liquid crystal molecules assume the orientation of the molecules of the underlying orientating layer, and cross linking the monomers to fix the orientation of the liquid crystal molecules (col. 4, lines 41-48 and col. 5, lines 12-25).

Regarding **claim 66**, Schadt discloses a step of applying a second orientation layer (7 and/or 8, Figs. 4-5) on the LCP layer, and applying a second LCP layer (9 and/or 10, Figs. 4-5) on the second orientating layer.

Regarding **claim 68**, Schadt discloses the second orientating layer is exposed to linear polarized light through a mask having a different pattern to the mask used to produce the orientation pattern in the first orientating layer to produce a different orientation pattern in the second orientating layer (col. 5, lines 48-63).

7. **Claims 1, 4, 7, 9, 10, 12, 14, 17-19, 21, 26, 28, 30, 33, 34, 38, 42, 43, 45, 49 and 51** are rejected under 35 U.S.C. 103(a) as being unpatentable over Taylor et al. (US 6,062,604) in view of Schadt et al. (US 6,160,597), of record in the IDS, and Yamaoka et al. (US 6,819,382 B2).

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Regarding **claim 1**, Taylor discloses a security document or device (see abstract and Figs. 1-8) comprising:

a substrate (2, Figs. 1-8) including at least one layer of polymeric material (col. 5, lines 47-55); and

an optical component (see 21, Figs. 3-4; col. 3, lines 21-46).

Taylor does not explicitly disclose the optical component is formed by at least one orientating layer and at least one liquid crystal polymer (LCP) layer in contact with the orientating layer, and an intermediate layer provided between the optical component and the substrate which improves the adhesion of the optical component to the substrate.

However, Schadt discloses a security document or device (see Figs. 1-5) comprising an optical component formed by at least one orientating layer (2, Figs. 1-5) and at least one liquid crystal polymer (LCP) layer (3, Figs. 1-5) in contact with the orientating layer.

It would have been obvious to one having ordinary skill in the art at the time of applicant's invention to incorporate the optical component being formed by at least one orientating layer and at least one liquid crystal polymer (LCP) layer in contact with the orientating layer, as in Schadt, into the security document or device of Taylor to provide different optical and orientating purposes for safeguarding against counterfeiting and copying (Schadt, col. 4, lines 1-8).

Schadt also fails to disclose an intermediate layer provided between the optical component and the substrate which improves the adhesion of the optical component to the substrate.

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However, Yamaoka discloses a device (see abstract) comprising an intermediate layer provided between an optical component and a substrate which improves the adhesion of the optical component to the substrate (col. 11, lines 56-63; col. 13, line 63 – col. 14, line 4; col. 15, lines 5-31; and col. 16, line 29 – col. 17, line 8).

It would have been obvious to one having ordinary skill in the art at the time of applicant's invention to incorporate an intermediate layer provided between the optical component and the substrate which improves the adhesion of the optical component to the substrate, as in Yamaoka, into the security document or device of Taylor and Schadt, since the motivation to bond layers of optical components to substrates in order to secure them together so as to prevent them from separating is highly obvious in the art.

Regarding **claim 4**, Taylor and Schadt fail to explicitly disclose the intermediate layer comprises a primer layer which includes a primer selected from the group of:

hydroxyl terminated polymers; hydroxyl terminated polyester based co-polymers; polyethyleneimine; cross-linked hydroxylated acrylates; uncross-linked hydroxylated acrylates; polyurethanes; UV-curing anionic acrylates; or UV-curing cationic acrylates.

However, Yamaoka discloses the intermediate layer comprises a primer layer which includes a primer selected from the group of:

hydroxyl terminated polymers; hydroxyl terminated polyester based co-polymers; polyethyleneimine; cross-linked hydroxylated acrylates; uncross-linked hydroxylated acrylates; polyurethanes; UV-curing anionic acrylates; or UV-curing cationic acrylates (col. 16, lines 33-41).

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It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to incorporate the intermediate layer comprising a primer layer which includes a primer selected from the group of:

hydroxyl terminated polymers; hydroxyl terminated polyester based co-polymers; polyethyleneimine; cross-linked hydroxylated acrylates; uncross-linked hydroxylated acrylates; polyurethanes; UV-curing anionic acrylates; or UV-curing cationic acrylates, as in Yamaoka, into the security document or device of Taylor and Schadt, since these materials have excellent light transmittance and adhesiveness (Yamaoka, col. 16, line 29 – col. 17, line 8).

Regarding **claim 7**, Taylor and Schadt fail to explicitly disclose the primer layer includes a cross-linker selected from the group comprising:

isocyanates; multifunctional isocyanates; polyaziridines; zirconium complexes; aluminium acetylacetone; melamines; or carbodi-imides.

However, Yamaoka discloses the primer layer includes a cross-linker selected from the group comprising:

isocyanates; multifunctional isocyanates; polyaziridines; zirconium complexes; aluminium acetylacetone; melamines; or carbodi-imides (col. 16, lines 33-41).

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to incorporate the primer layer including a cross-linker selected from the group comprising:

isocyanates; multifunctional isocyanates; polyaziridines; zirconium complexes; aluminium acetylacetone; melamines; or carbodi-imides, as in Yamaoka, into the security

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document or device of Taylor and Schadt, since these materials have excellent light transmittance and adhesiveness (Yamaoka, col. 16, line 29 – col. 17, line 8).

Regarding **claim 9**, Taylor discloses the substrate is formed at least partly from a polymeric material (col. 5, lines 47-55).

Regarding **claim 10**, Taylor discloses the substrate includes at least one layer of biaxially oriented polymeric material (col. 5, lines 47-55).

Regarding **claim 12**, Taylor discloses the substrate comprises a base layer with at least one polymeric coating provided on one or both sides of the base layer (col. 5, lines 47-55).

Regarding **claim 14**, Taylor discloses the substrate includes a base layer formed from a transparent material, and at least one opacifying coating (see 3, Figs. 1-8; col. 5, lines 56-65) applied on at least one side of the base layer (col. 5, lines 25-32).

Regarding **claim 17**, Taylor discloses the at least one opacifying coating comprises a major proportion of one or more opacifying pigments bound with a minor proportion of a cross-linkable polymeric binder (col. 5, lines 56-65).

Regarding **claim 18**, Taylor discloses said one or more opacifying pigment is selected from the group including:

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titanium dioxide (TiO<sub>2</sub>); calcium carbonate (CaCO<sub>3</sub>); barium sulphate (BaSO<sub>4</sub>); and zinc oxide (ZnO) (col. 5, lines 56-65).

Regarding **claim 19**, Taylor discloses one or more layers of printed indicia (3, Figs. 1-8) are provided on the at least one opacifying coating (col. 5, lines 25-32 and lines 56-65).

Regarding **claim 21**, Taylor discloses the at least one opacifying coating only partially covers the transparent base layer so as to form at least one transparent portion or window (5, Figs. 1-8) which is not covered by the opacifying coating (col. 5, line 66 – col. 6, line 6).

Regarding **claim 26**, Taylor discloses the optical component is applied at least partially within the area of the window or windows (see 21 in 5, Fig. 4, for instance; col. 6, lines 48-54).

Again, Taylor does not explicitly disclose the optical component is formed by the orientating layer and the LCP layer.

However, Schadt discloses the optical component is formed by the orientating layer (2, Figs. 1-5) and the LCP layer (3, Figs. 1-5).

It would have been obvious to one having ordinary skill in the art at the time of applicant's invention to incorporate the optical component being formed by the orientating layer and the LCP layer, as in Schadt, into the security document or device of Taylor to provide different optical and orientating purposes for safeguarding against counterfeiting and copying (Schadt, col. 4, lines 1-8).

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Regarding **claim 28**, Taylor fails to explicitly disclose the orientating layer is in intimate contact with the LCP layer.

However, Schadt discloses the orientating layer is in intimate contact with the LCP layer (see 2 and 3 in Figs. 1-5).

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to incorporate the orientating layer being in intimate contact with the LCP layer, as in Schadt, into the security document or device of Taylor to orientate the molecules in the LCP layer by the orientating layer.

Regarding **claims 30 and 33**, Taylor fails to explicitly disclose the orientating layer is a photo-orientated polymer network (PPN), and a photo-orientated polymer network is applied to the orientating layer deposited on the substrate.

However, Schadt discloses the orientating layer is a photo-orientated polymer network (PPN) (col. 4, lines 41-54), and a photo-orientated polymer network is applied to the orientating layer deposited on a substrate (1, Figs. 1-5).

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to incorporate the orientating layer being a photo-orientated polymer network (PPN), and a photo-orientated polymer network being applied to the orientating layer deposited on the substrate, as in Schadt, into the security document or device of Taylor, since PPNs are known and commonly used in the art for orientating liquid crystal materials.

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Regarding **claim 34**, Taylor fails to explicitly disclose the LCP layer comprises an anisotropic layer of orientated cross-linked liquid crystal monomers.

However, Schadt discloses the LCP layer comprises an anisotropic layer of orientated cross-linked liquid crystal monomers (col. 5, lines 12-25).

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to incorporate the LCP layer comprising an anisotropic layer of orientated cross-linked liquid crystal monomers, as in Schadt, into the security document or device of Taylor, since these materials are well-known and commonly used in the art.

Regarding **claims 38 and 42**, Taylor fails to explicitly disclose further orientating layers and/or LCP layers, and two or more orientating layers and LCP layers having different orientation patterns provided to form a stack of orientation layers and LCP layers on the substrate.

However, Schadt discloses further orientating layers and/or LCP layers (see 7-10, Figs. 4-5), and two or more orientating layers (7 and 8, Figs. 4-5) and LCP layers (9 and 10, Figs. 4-5) having different orientation patterns provided to form a stack of orientation layers and LCP layers on a substrate (1, Figs. 1-5) (col. 5, lines 48-58).

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to incorporate further orientating layers and/or LCP layers, and two or more orientating layers and LCP layers having different orientation patterns provided to form a stack of orientation layers and LCP layers on the substrate, as in Schadt into the security document or



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device of Taylor to provide different optical and orientating purposes for safeguarding against counterfeiting and copying (Schadt, col. 4, lines 1-8).

Regarding **claim 43**, Taylor does not explicitly disclose a reflector layer.

However, Schadt discloses a reflector layer (col. 4, lines 41-54 and col. 6, lines 15-16).

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to incorporate a reflector layer, as in Schadt, into the security document or device of Taylor to provide a reflective device if desired.

Regarding **claim 45**, Taylor discloses a polarizing layer (31 and/or 32, Figs. 5-6).

Regarding **claim 49**, Taylor discloses the optical component contains at least one hidden image (col. 9, lines 27-43 and claim 36).

Again, Taylor does not explicitly disclose the optical component is formed by the combination of the at least one LCP layer and the at least one orientating layer.

However, Schadt discloses the optical component is formed by the combination of the at least one LCP layer (3, Figs. 1-5) and the at least one orientating layer (2, Figs. 1-5).

It would have been obvious to one having ordinary skill in the art at the time of applicant's invention to incorporate the optical component being formed by the combination of the at least one LCP layer and the at least one orientating layer, as in Schadt, into the security document or device of Taylor to provide different optical and orientating purposes for safeguarding against counterfeiting and copying (Schadt, col. 4, lines 1-8).

Regarding **claim 51**, Taylor discloses the optical component is provided at a first portion with a reflector or a polarizing layer and a polarizer (31 and/or 32, Figs. 5-6) is provided in a window (5, Figs. 3-4) at a second, laterally spaced portion so that the security document is self-authenticating by folding the document to bring the first and second portions into register (see Figs. 2, 4, 6 and 8 and abstract).

### Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PAISLEY L. ARENDT whose telephone number is 571-270-5023. The examiner can normally be reached on MON - FRI, 9:00 a.m. - 5:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Robinson can be reached on 571-272-2319. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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/Paisley L. Arendt/

Patent Examiner, Art Unit 2883

/Mark A. Robinson/

Supervisory Patent Examiner, Art Unit 2883